Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JEFFREY S. DUGAN, JOHN A. HODAN
and JAMES R. LISK, JR.

Appeal No. 1995-2802
Application 07/983,002

ON BRIEF

Before KIMLIN, WALTZ and KRATZ, Administrative Patent Judges.

WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 1 through 12, which are the only claims in this application.

According to appellants, the invention is directed to a thermoplastic fiber which has moisture wicking properties due

to one or more internal lengthwise open channels. Each open channel has an opening and at least one groove which has a defined mouth. The mouth has a width such that the average transverse cross-sectional area of the groove is greater than or equal to $B(width)^2/8$ and a durable hydrophilic surface modifier is associated with the channel (Brief, page 2).

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

1. A thermoplastic fiber demonstrating moisture wicking properties comprising:

a) a fiber surface defining an outer boundary and one or more internal lengthwise open channels each having an opening and at least one groove having a longest dimension, a deepest point and a mouth, said mouth defined by moving a line which is perpendicular to said longest dimension from said deepest point along said longest dimension until a largest convex set is defined, said mouth having a width wherein the average transverse cross-sectional area of the groove is greater than or equal to $(B(width)^2)/8$; and

b) a durable hydrophilic surface modifier associated with said channel.

The examiner has relied upon the following references as evidence of obviousness:

Belitsin et al. (Belitsin)	4,054,709	Oct. 18, 1977
Reinehr et al. (Reinehr)	4,163,078	Jul. 31, 1979
Masuda et al. (Masuda)	4,381,325	Apr. 26, 1983
Sato et al. (Sato)	4,639,397	Jan. 27, 1987
Yoshimoto et al. (Yoshimoto)	4,791,026[1]	Dec. 13, 1988
Largman et al. (Largman)[2]	5,057,368	Oct. 15, 1991

Claims 1-7 and 9 stand rejected under 35 U.S.C. § 103 as unpatentable over Masuda in view of Sato or Belitsin or Reinehr or Yoshimoto (Answer, page 5). Claims 8 and 10-12 stand rejected under 35 U.S.C. § 103 as unpatentable over the references as applied above further in view of Largman (Id.). We reverse all of the examiner's rejections for reasons which follow.

OPINION

The thermoplastic fiber recited in claim 1 on appeal comprises a fiber surface with one or more internal lengthwise open channels with at least one groove where the defined mouth

[1]This reference is incorrectly cited as U.S. Patent No. 4,791,021 on page 4 of the Answer.

[2]This reference is incorrectly cited as "Largmar" on page 4 of the Answer and "Langman" on pages 5 and 8 of the Answer.

has a width such that the average transverse cross-sectional area of the groove is greater than or equal to $(B(width)^2)/8$. The thermoplastic fiber also has a "durable hydrophilic surface modifier associated" with each channel.

Appellants and the examiner disagree as to the scope of the claimed "durable hydrophilic surface modifier associated" with each channel. Appellants argue that "durable" is defined in the specification and would not include the Masuda treatment of the fibers with alkali to render the fiber surface hydrophilic in a physical rather than a chemical way (Brief, pages 5-6). The examiner states that Masuda teaches a hydrophilic surface modifier but "[t]he question remains if said patented modifier is durable." (Answer, page 9). The examiner states that appellants have failed to define what constitutes "durable" in the specification and claims (Id.). The examiner also concludes that there is reason to believe the modifier of Masuda is "durable" because Masuda teaches the intention to produce "durable" products (Answer, paragraph bridging pages 9-10, citing Masuda, column 5, lines 64-66).

Implicit in our review of the examiner's obviousness analysis is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation. Gechter v. Davidson, 116 F.3d 1454, 1457, 1460 n.3, 43 USPQ2d 1030, 1032, 1035 n.3 (Fed. Cir. 1997). Accordingly,

we must construe the scope and meaning of the contested phrase "durable hydrophilic surface modifier associated" with each channel. Our reviewing court has stated:[3]

> [T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification.

As noted by appellants on page 5 of the Brief, the term "durable" is defined in the specification as follows:[4]

> As used herein, the term "durable" with reference to surface modification means wicking performance after wet-processing, such as dyeing, or at least ten launderings that is superior to wicking performance without the surface modification.

The written description in appellants' specification sets forth what is meant by hydrophilic surface modification associated with each channel (page 7, lines 1-14, of the specification). Appellants explain that the hydrophilic surface modification may be accomplished by application of a

---

[3] In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

[4] Specification, page 1, lines 8-10.

hydrophilic finish or

co-extrusion or grafting of a hydrophilic component with the fiber-forming base polymer. Appellants state that the modification remains present in the channel as suitable modifiers should be “durable.”

Suitable hydrophilic finishes include sulphonated polyesters and ethoxylated polyamides.

In view of this claim construction, we determine that the applied prior art on this record fails to disclose, suggest or teach the "durable hydrophilic surface modifier associated with said channel" as recited in claim 1 on appeal. Masuda teaches that "the fiber material surface is rendered hydrophilic by corrosion [due to alkali treatment] and fine convexities and concavities are imparted to the surface." (Column 5, lines 38-40). The examiner has presented no evidence or reasoning as to why the artisan would have expected the physical surface modification of Masuda to be equivalent to the chemical modification described by appellants and to be "durable" as defined by appellants. The examiner points to the disclosure of Masuda that the fiber "has excellent durability against rubbing" (column 5, lines 64-65) but has failed to show that this disclosure would have suggested the "durable" modifier recited in the claims on appeal and as defined in the specification.

Reinehr also discloses surface modification of fibers by

adding a substance such as glycerin to the spinning solvent to enhance the hydrophilic nature of the fibers produced (column 1, lines 48-51; column 2, line 60; column 3, lines 7-12). However, Reinehr teaches removal of this substance by post-treatment rinsing (column 2, lines 61-65; column 3, lines 38-41; column 4, lines 16-42).

Additionally, the examiner has not established that the limitation of claim 1 on appeal regarding the average transverse cross-sectional area was disclosed, suggested or taught by the applied prior art. The examiner applies Sato, Belitsin, Reinehr or Yoshimoto to "teach the particular cross-section claimed by appellant" since the only requirement to meet this limitation is "a fiber with the general shape as that claimed." (Answer, page 9). However, the examiner has not presented any evidence or reasoning to support this conclusion. The examiner states that appellants have not assigned an upper or lower limit to the "longest dimension" but fails to explain why this would affect the fiber shape or the equation that calculates the area Id.). Furthermore, if mere similarity in fiber shape is sufficient to meet the area limitation of claim 1 on appeal, the examiner has not

explained why the fiber shapes in Masuda closest to the claimed shapes (see Figure 5 of Masuda and appellants' Figures 1-3) are "two other cross-sectional fiber shapes with which difficulty is encountered in accordance with this invention." (Column 2, lines 44-46).

For the foregoing reasons, we determine that the examiner has failed to establish a prima facie case of obviousness in view of the reference evidence of Masuda, Sato, Belitsin, Reinehr and Yoshimoto. The citation of Largman to show it is known in the art to form wicking thermoplastic fibers with bicomponent filaments (Answer, sentence bridging pages 5-6) does not remedy the deficiencies in the evidence noted above. Accordingly, the rejection of claims 1-7 and 9 under § 103 over Masuda in view of Sato, Belitsin, Reinehr, or Yoshimoto is reversed. Similarly the rejection of claims 8 and 10-12 under § 103 over the references as applied above further in view of Largman is reversed.

The decision of the examiner is reversed.

REVERSED

)
EDWARD C. KIMLIN)

Administrative Patent Judge)
)
)
) BOARD OF PATENT
THOMAS A. WALTZ)
Administrative Patent Judge) APPEALS AND
)
) INTERFERENCES
PETER F. KRATZ)
Administrative Patent Judge)

TAW:hh

Karen M. Dellerman
BASF Corporation
Sand Hill Road
Enka, NC 28728